



<b>DATE:</b>	12/23/2014
<b>TO:</b>	Health Alert Network
<b>FROM:</b>	Michael Wolf, Secretary of Health
<b>SUBJECT:</b>	<b>Guidance for Clinicians on Mumps Diagnosis, Testing and Reporting</b>
<b>DISTRIBUTION:</b>	Butler, Armstrong, Indiana, Cambria, Beaver, Allegheny, Westmoreland, Washington, Greene, Fayette, and Somerset Counties
<b>LOCATION:</b>	Southwestern Pennsylvania
<b>STREET ADDRESS:</b>	n/a
<b>COUNTY:</b>	n/a
<b>MUNICIPALITY:</b>	n/a
<b>ZIP CODE:</b>	n/a

**This transmission is a “Health Advisory”:** provides important information for a specific incident or situation; may not require immediate action.

**HOSPITALS:** PLEASE SHARE WITH ALL MEDICAL, PEDIATRIC, INFECTION CONTROL, NURSING, AND LABORATORY STAFF IN YOUR HOSPITAL

**EMS COUNCILS:** PLEASE DISTRIBUTE AS APPROPRIATE

**FQHCs:** PLEASE DISTRIBUTE AS APPROPRIATE

**LOCAL HEALTH JURISDICTIONS:** PLEASE DISTRIBUTE AS APPROPRIATE

**PROFESSIONAL ORGANIZATIONS:** PLEASE DISTRIBUTE TO YOUR MEMBERSHIP

As of December 22, 2014, several confirmed and probable cases of mumps have been diagnosed among players and staff of the Pittsburgh Penguins. The Allegheny County Health Department (ACHD) and the Pennsylvania Department of Health (PaDOH) are sharing information about mumps with area providers.

The PaDOH urges providers to obtain the following specimens from patients with a suspected case of mumps

- Oral or buccal swab after parotid massage for polymerase chain reaction (PCR)
  - Synthetic swabs are preferred (alginate or cotton swabs will be rejected)
  - Use viral transport media
  - Maintain at 4<sup>0</sup>C and ship on cold packs within 24 hours of collection
- Urine
  - Not as useful as oral specimens

- May not be positive until >4 days after symptom onset
- Collect minimum of 50 mls in sterile container
- Centrifuge for 15 min at 4<sup>0</sup>C
- Resuspend sediment in viral transport media and ship on cold packs within 24 hours of collection or
- Freeze at -70<sup>0</sup>C and ship on dry ice

and

- Serum for mumps IgM and IgG testing
  - Acute phase serum as soon as possible; convalescent serum 2-3 weeks later
  - Collect 7–10 ml of blood in a red-top or serum-separator tube (SST).

Suspected cases of mumps should be reported to the appropriate local public health jurisdiction and entered into PA-NEDSS. If you do not have a PA-NEDSS account, email [PA-NEDSS@pa.gov](mailto:PA-NEDSS@pa.gov) to set one up. For residents of Allegheny County, contact the ACHD at 412-687-2243. For residents of other Pennsylvania counties, please contact the PA DOH at 877-PA-HEALTH (877-724-3258).

### ***Mumps Outbreak Associated with the National Hockey League***

From October 12 through December 18, 2014, 21 confirmed or probable cases of clinically-compatible mumps have been identified in persons affiliated with five National Hockey League (NHL) teams, one minor league team, and one league official. These reported cases appear to be affecting at least 6 non-contiguous states in the U.S. and Canada. Affected teams are located in California, Minnesota, Missouri, New York, Pennsylvania and a minor league team in Virginia. The NHL official was diagnosed in Canada.

Of the 21 reported cases, ten were confirmed by PCR, four were IgM positive, and three are pending laboratory testing. Genotype G, which is the most common genotype detected in recent years, was detected in two cases. There has been at least one hospitalization and three cases with orchitis.

While evaluation of the NHL schedule may infer transmission between specific teams, it should be noted the incubation period for mumps can vary by as much as 2 weeks (12-25 days) and that the teams have a busy travel schedule. Therefore, exposures in multiple jurisdictions are possible.

CDC is working with the league to heighten awareness and provide guidance for surveillance and control. On 11/17/2014, the NHL Infection Control Subcommittee sent an alert that included CDC guidance to all head team physicians and head team athletic trainers. Vaccination status of individuals on the teams and staff is being evaluated and at least three of the affected teams have provided an additional dose of Measles, Mumps, and Rubella Vaccine (MMR) to their players and staff to provide additional potential protection.

### ***Mumps clinical manifestations and transmission***

Mumps is an acute viral infection characterized by a non-specific prodrome including myalgia, anorexia, malaise, headache and fever, followed by acute onset of unilateral or bilateral tender swelling of parotid or other salivary glands. In unvaccinated populations, an estimated 30-70% of mumps infections are

associated with typical acute parotitis. However, as many as 20% of infections are asymptomatic and nearly 50% are associated with non-specific or primarily respiratory symptoms, with or without parotitis.

Complications of mumps infection can include deafness, orchitis, oophoritis or mastitis (inflammation of the testicles, ovaries, or breasts respectively), pancreatitis, meningitis/encephalitis, and spontaneous abortion. With the exception of deafness, these complications are more common among adults than children.

Transmission of mumps virus occurs by direct contact with respiratory droplets, saliva or contact with contaminated fomites. The incubation period is generally 16-18 days (range 12-25 days) from exposure to onset of symptoms. Mumps virus has been isolated from saliva from between two and seven days before symptom onset until nine days after onset of symptoms. Mumps is most infectious from two days before to five days after symptom onset, but asymptomatic people can transmit disease.

### ***Mumps Prevention***

The principal strategy to prevent mumps is to achieve and maintain high immunization levels. The Advisory Committee on Immunization Practices (ACIP) recommends that: (1) all preschool aged children 12 months of age and older receive one dose of measles-mumps-rubella vaccine (MMR); (2) all school-aged children receive two doses of MMR; and (3) ensure that all adults have evidence of immunity against mumps (5). As noted below, two doses of mumps vaccine are more effective than a single dose. Consequently, during outbreaks and for at-risk populations, ensuring high vaccination coverage with two doses is encouraged. For example, health care workers may be at increased risk of acquiring mumps and transmitting to patients and thus should receive two doses of MMR vaccine or provide proof of immunity. Since vaccination is the cornerstone of mumps prevention, public and private health entities concerned about spread of mumps in a population can review the vaccination status of populations of interest and work to address gaps in vaccination.

### ***Mumps Vaccine Effectiveness***

Data from outbreak investigations have shown that the effectiveness of MMR against mumps is approximately 80% after one dose and limited data suggest effectiveness of approximately 90% after two doses. Available evidence suggests that mumps vaccination should provide immunity against the genotype G virus responsible for the current US outbreak. A study of a 2005 New York outbreak that began with imported disease from the UK (7), demonstrated vaccine effectiveness in the expected range for both one and two doses (New York, unpublished data). However, since the vaccine is not 100% effective, some cases can occur in vaccinated persons. When a highly-vaccinated population is exposed to disease, most cases of disease would be expected to be among vaccinated persons. Mumps vaccine has not been shown to be effective in post-exposure prophylaxis and an interval of 2-4 weeks after vaccination may be required for the vaccine's full immunogenicity to be achieved. For these reasons, and because of the mumps' long incubation period (12-25 days), during an outbreak, newly-vaccinated persons may develop mumps disease up to a month after vaccination.

### ***Control of mumps outbreaks***

The main strategies for controlling a mumps outbreak are to define the at-risk population and transmission setting, identify and isolate suspected cases, and to rapidly identify and vaccinate susceptible persons or, if a contraindication to MMR vaccine exists, to exclude susceptible persons from the setting to prevent exposure and transmission. Specific strategies are listed below.

1. **Offer MMR vaccine to persons without evidence of immunity.** Evidence of immunity includes physician diagnosis or laboratory evidence of mumps infection, birth before 1957 or one dose of MMR vaccine. For pre-school aged children, the first MMR dose should be administered as close to age 12 months as possible. **Although birth before 1957 is usually considered proof of immunity, during an outbreak, vaccination can be considered for this age group** if the epidemiology of the outbreak suggests that they are at increased risk of disease. Since two doses of MMR vaccine is more effective than one dose for preventing mumps, **a second dose of MMR vaccine is recommended for the following groups: health care workers, school-aged children, students at post-high school educational institutions and other age groups considered at high risk of exposure.**
2. Surveillance for mumps should be enhanced in all affected areas for persons with parotitis or other salivary gland inflammation. Enhanced surveillance should continue for 50 days (two times the maximum incubation period) after the date of illness onset in the last identified case. CSTE approved case definitions and case classifications for mumps are available.
3. **Persons with suspected mumps should be tested and reported immediately to local public health officials.** Information on collection and testing of clinical specimens for mumps can be found at <http://www.cdc.gov/mumps/lab/qa-lab-test-infect.html>. Testing is essential as not all cases of parotitis are mumps, although mumps is the only known cause of epidemic parotitis.

With previous contact with mumps virus either through vaccination (particularly with 2 doses) or natural infection, serum mumps IgM test results may be negative; immunoglobulin G (IgG) test results may be positive at initial blood draw; and viral detection in RT-PCR or culture may have low yield if the buccal swab is collected too long after parotitis onset.

Therefore, **mumps cases should not be ruled out by negative laboratory results.** Serologic tests should be interpreted with caution, as false positive and false negative results are possible with IgM tests.

4. **Persons suspected of having mumps should be isolated for five days after symptom onset.** In health care settings, the use of **respiratory precautions** is recommended.
5. **Exclusion of persons without evidence of immunity to mumps from institutions such as schools and colleges affected by a mumps outbreak** (and other, unaffected institutions judged by local public health authorities to be at risk for transmission of disease) should be considered. Once vaccinated, students can be readmitted to school. The period of exclusion for those that remain unvaccinated should be **for at least 25**

**days after the onset of parotitis in the last person with mumps in the affected institution.**

Categories of Health Alert messages:

**Health Alert:** conveys the highest level of importance; warrants immediate action or attention.

**Health Advisory:** provides important information for a specific incident or situation; may not require immediate action.

**Health Update:** provides updated information regarding an incident or situation; no immediate action necessary

This information is current as of December 23, 2014, but may be modified in the future. We will continue to post updated information regarding the most common questions about this subject.